WHAT IS CLAIMED IS:

1. An optoelectric module having x, y, and z axes, said module comprising:

a connector interface adapted to interconnect with a multi-fiber assembly having an x,y array of fibers;

a plurality of OEDs for converting between optical and electrical signals; and

optical paths wherein each optical path has a first end adapted for optically coupling with a corresponding fiber in the x,y array of a multi-fiber assembly interconnected with said connector interface, and a second end for optically coupling with a corresponding OED, wherein the distance between the second ends of at least two optical paths is greater than the distance between their corresponding first ends and wherein the distance across the second ends along the x-axis is no greater than the distance across the first ends along the x-axis.

2. The module of claim 1, wherein each optical path comprises a first section which includes said first end and is parallel to the z-axis, and a second section which includes said second end, wherein said first and second sections are not coaxial.

3. The module of claim 2, wherein said second sections are not parallel to the z-axis.

4. The module of claim 3, wherein a portion of said second sections are substantially perpendicular to the z-axis.

5. The module of claim 4, wherein said first ends are arranged along the x,y axes in the same spacial relationship as the x,y array of a multi-fiber assembly, and wherein the arrangement of first ends is elongated along the x-axis.

6. The module of claim 5, wherein said second sections are substantially parallel to the y-axis

7. The module of claim 6, wherein said second sections are substantially perpendicular to the x-axis

8. The module of claim 1, wherein (a) the distance along the y-axis between said at least two second ends is greater than the distance along the y-axis of their corresponding first ends, or (b) said at least two second ends are separated by a certain distance along the z-axis, or a combination of (a) and (b) above.

9. The module of claim 8, wherein the OEDs corresponding to said at least two second ends are spaced along the z-axis.

10. The module of claim 1, wherein said optical paths are defined in a unitary optical block

11. The module of claim 10, wherein said optical block comprises an injection-moldable material.

12. The module of claim 11, wherein said unitary optical block comprising at least:

an x,y array of first lenses at said first ends of said optical paths and adapted to couple optically with the x,y array of a multi-fiber assembly;

second lenses at said second ends of said optical paths, said second lenses being adapted to cooperate optically with said OEDs, each second lens corresponding to a first lens; and

at least one reflective surface along each optical path for changing the direction of light propagating therein.

13. The module of claim 12, wherein said optical block further comprises a second reflective surface along an optical path to redirect a portion of light propagating therein for feedback information.

14. The module of claim 13, wherein said optical block comprises an OED interface

15. The module of claim 14, wherein said OED interface is a cavity

16. The module of claim 15, wherein said OED is a lead frame and said OED interface is a cavity adapted to receive said lead frame.

17. The module of claim 14, wherein each OED interface is discrete

18. The module of claim 1, wherein said module further comprises circuitry to electrically connect said OED to a host system in which said module is installed.

19. The module of claim 1, further comprising a host system in combination with said module

20. The module of claim 19, wherein said host system is a router

21. An optical subassembly of all critical optical alignments, said optical subassembly comprising:

a unitary structure of an optically-clear moldable material comprising at least the following features:

a plurality of first lenses adapted for interfacing with a multi-fiber array of a connector assembly, each first lens corresponding to a fiber in said multi-fiber array;

a plurality of second lenses adapted to cooperate optically with said OEDs, wherein each second lens is optically coupled to a first lens along an optical path to define said plurality of optical paths;

at least one reflective surface disposed along one or more optical paths to alter the direction of said optical paths, wherein said optical paths are parallel between said first lens and said reflective surface;

a plurality of OED receptacles for receiving said OEDs, each OED receptacle including one of said second lenses; and

at least one alignment member for aligning each fiber end of a multi-fiber array with a first lens; and

a plurality of OEDs mounted in said OED receptacles, each OED being optically coupled to one of said second lenses.

22. The optical subassembly of claim 21, wherein said alignment member provides for x,y alignment.

23. The optical subassembly of claim 22, wherein said alignment member is a structure which is adapted to cooperate with a corresponding structure on a mating cable assembly.

24. The optical subassembly of claim 23, wherein said alignment structure is one of a pin or a pin receiving cavity adapted to receive said pin, and wherein said cooperating structure is the other of said pin or said pin receiving cavity.

25. The optical subassembly of claim 21, wherein said first lens are located on an interface surface and said alignment member comprises pins extending from said interface surface, said pins being configured on said interface surface to cooperate with receiving pin cavities on said fiber assembly.

26. The optical subassembly of claim 25, wherein said pins are integrally molded to said optical block.

27. The optical subassembly of claim 21, wherein said alignment member comprises a mating flange adapted for mating with a corresponding flange of a connector interface which is adapted to interengage a connector assembly.

28. The optical subassembly of claim 27, wherein further comprising a connector portion connected to said mating flange and adapted to receive a fiber assembly, said connector portion comprising a housing defining an opening and a receiving cavity to receive the cable assembly and guides extending from said housing into said receiving

cavity, said guides being adapted to guide the fiber assembly into at least proximate alignment with said first lens of said optical block.

29. The optical subassembly of claim 21, wherein said first lenses are located on an interface surface that extends from said optical block, said alignment member further comprises pins extending from said interface, said housing of said connector interface defining a second opening to receive said interface surface.

30. The optical subassembly of claim 21, wherein said receptacle defines a cavity dimensionally configured to receive at least a portion of an OED.

31. The optical subassembly of claim 30, wherein said cavity is adapted to receive a lead frame and said OEDs are lead frames.

32. The optical subassembly of claim 31, wherein said cavity has a reference surface a certain distance from its second lens to contact a cooperating surface on said lead frame to provide for alignment.

33. The optical subassembly of claim 32, wherein said cavity is provided with stops that are configured to contact a lead frame when said lead frame is aligned within said cavity.

34. The optical subassembly of claim 33, wherein said OED receptacles are standardized to a particular lead frame configuration, said lead frame configuration being adapted to support lasers, LEDs, photodiodes or detectors.

35. An optical block, said optical subassembly comprising:

a unitary structure of an optically-clear moldable material comprising at least the following features:

a plurality of first lenses adapted for interfacing with a multi-fiber array of a connector assembly, each first lens corresponding to a fiber in said multi-fiber array;

a plurality of second lenses adapted to cooperate optically with said OEDs, wherein each second lens is optically coupled to a first lens along an optical path to define said plurality of optical paths; and

at least one reflective surface disposed along one or more optical paths to alter the direction of said optical paths, wherein said optical paths are parallel between said first lens and said reflective surface, and wherein the distance between adjacent second lens is greater than the distance between their corresponding first lenses and wherein the distance across the second lenses along the x-axis is no greater than the distance across the first lenses along the x-axis.

36. A unitary optical block for use in an optoelectric module to transmit optical signals between a multi-fiber assembly and a plurality of OEDs, said optical block comprising a molded material having optical alignment features to provide x, y alignment of said multi fiber assembly and at least z-alignment of said OED and all optical alignments therebetween.

37. An optoelectric module having x, y, and z axes, said module comprising:

a connector interface adapted to interconnect with a multi-fiber assembly having an x,y array of fibers;

a plurality of OE devices for converting between optical and electrical signals; and

an optical block comprising a unitary structure of an optically-clear moldable material comprising at least the following features:

a plurality of first lenses adapted for interfacing with a multi-fiber array of said connector assembly, each first lens corresponding to a fiber in said multi-fiber array;

a plurality of second lenses adapted to cooperate optically with said OE devices, wherein each second lens corresponds to a first lens and is not coaxial with said first lens;

one or more reflective surfaces;

wherein said first lenses, said seconds lens and said reflective surfaces are configured to provide a plurality of optical paths in said optical block, each optical path comprising a first section between a particular first lens and a reflective surface and a second section between a corresponding second lens and said reflective surface, wherein said first sections are parallel.

38. A feedback mechanism for use in parallel optics, said feedback mechanism comprising:

an optical assembly defining a plurality of optical paths, at least one of said optical paths being a transmitting optical path which extends from a light-emitting component of an OED to a cable assembly interface; and

at least one partially-reflective surface disposed across said transmitting optical path to reflect a portion of light transmitted by said light-emitting OED, wherein said partially-reflective surface is at an angle to said transmitting optical path such that the optical path of the reflected portion of light is not coaxial to said transmitting optical path and is incident upon a monitor for controlling the output of said light-emitting OED.

39. The feedback mechanism of claim 38, wherein said optical assembly is a unitary structure of an optically-clear moldable material comprising at least the following features:

a plurality of first lenses adapted for interfacing with a multi-fiber array of a connector assembly, each first lens corresponding to a fiber in said multi-fiber array;

a plurality of second lenses adapted to cooperate optically with said OEDs, wherein each second lens is optically coupled to a first lens along an optical path to define said plurality of optical paths; and

wherein one of said optical paths is said transmitting optical path.

40. The feedback mechanism of claim 39, wherein said unitary structure has a cavity for receiving said partially-reflective surface.

41. The feedback mechanism of claim 40, wherein said partially-reflective surface is a piece of coated flat glass

42. The feedback mechanism of claim 39, wherein said OED is a lead frame, and said light emitting component and said monitor are mounted on said lead frame.

43. The feedback mechanism of claim 39, wherein said unitary structure comprises at least one reflective surface disposed along said transmitting optical path to alter the direction of said transmitting optical path, wherein said transmitting optical path comprises a first section between its first lens and said reflective surface and a second section between said reflective surface and its second lens.

44. The feedback mechanism of claim 43, wherein a cavity is disposed along said first section and is angled such said optical path of said reflected portion of light is substantially along the same x,y-plane as said transmitting optical path.

45. The feedback mechanism of claim 44, wherein said unitary structure comprises a feedback lens adjacent said second lens for focusing said portion of reflected portion on said monitor

46. A method of assembling an OE module such that stress across optically aligned sub-components is reduced, said method comprising:

(a) providing an optical subassembly containing substantially all of the optical alignments from a cable assembly interface to at least one OED including the optical alignment of said OED;

(b) assembling said module at least to the extend that a circuit board to which said OE device is to be connected is held rigidly in relation to said optical assembly; and

(c) after step (b), electrically connecting said OE device to said circuit board.

47. The assembly method of claim 46, wherein step (a) further comprises:
connecting a fiber assembly connector to said optical block using a clam shell connector

48. The assembly method of claim 46, wherein step (a) further comprises:
connecting and optically aligning said OED to said optical assembly by placing said OED in a receptacle for receiving said OE device and actively aligning the OED and then fixing said OE device to said optical assembly.

49. The assembly method of claim 46, wherein in step (b), said circuit board is held rigidly in relation to said optical assembly by connecting said circuit board to said clam shell connector.

50. The assembly method of claim 46, wherein said OED comprises a lead frame, and wherein said circuit board is held rigidly in relation to said lead frame such that the leads of said lead frame extend into through-hole in said circuit board and thereby are allowed to float therein until soldered in place.